## ABSTRACT

An apparatus and method is discussed for characterizing a fluid sample downhole of aliphatic hydrocarbon compounds, aromatic hydrocarbon compound, or connate mud filtrates containing carbon-13 isotopes using an enhanced nuclear magnetic resonance (NMR) signal on a measurement-while-drilling device. To enhance the carbon-13 NMR signal these nuclei are being hyperpolarized. Either the Overhauser Effect (OE) or the Nuclear Overhauser Effect or optical pumping and the Spin Polarization Induced Nuclear Overhauser Effect (SPINOE) can serve as a mechanism for hyperpolarization of the carbon-13 nuclei.